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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Andrew John KENT et al.

Appl. No.: 10/758,301

Confirmation No.: 5162

Filed: January 16, 2004

For: Vacuum Cleaner

Art Unit: 1744

Examiner: To Be Assigned

Atty. Docket No.: 31577-200202

Customer No.: 26694

PATENT TRADEMARK OFFICE

**Submission of Certified Copy of Priority Document**

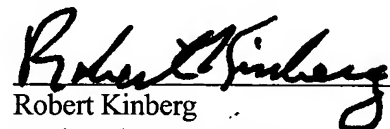
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA. 22313-1450

Sir:

Submitted herewith is a certified copy of Application No. 0117272.5 filed on July 16, 2001 in Great Britain, the priority of which is claimed in the present application under the provisions of 35 U.S.C. 119.

Respectfully submitted,

Date: 5/4/04

  
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INVESTOR IN PEOPLE

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Concept House  
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NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation and Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein together with the Statement of inventorship and of right to grant of a Patent (Form 7/77), which was subsequently filed.

I also certify that the application is now proceeding in the name as identified herein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Signed

*Stephen Hordley*

Dated 21 January 2004

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**GB 0117272.5**

By virtue of a direction given under Section 32 of the Patents Act 1977, the application is proceeding in the name of

**TECHTRONIC INDUSTRIES COMPANY LIMITED,**  
24/F CDW Building,  
388 Castle Peak Road,  
Tsuen Wan, N.T.,  
Hong Kong

Incorporated in Hong Kong,

[ADP No. 06548911003]

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## Patents Form 1/77

Patents Act 1977  
(1976)THE PATENT OFFICE  
18 JUL 2001  
RECEIVED BY FAXThe  
Patent  
Office

1/77

## Request for grant of a patent

The Patent Office

Cardiff Road  
Newport  
South Wales NP10 8QQ

1. Your reference A10373GB-DMW 16JUL01 E645532-1 D02811  
P01/7700 0.00-0117272.5

2. Patent application number  
(The Patent Office will fill in this part)

18 JUL 2001

0117272.5

3. Full name, address and postcode of the or of  
each applicant (underline all surnames)

Vax Limited  
Quillgold House  
Kingswood Road  
Hampton Lovett  
Droitwich  
Worcestershire WR9 0QH

Patents ADP number (if you know it)

If the applicant is a corporate body, give the  
country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

Vacuum Cleaner

5. Name of your agent (if you have one)

Forrester Ketley &amp; Co.

"Address for service" in the United Kingdom  
to which all correspondence should be sent  
(including the postcode)

Chamberlain House  
Paradise Place  
Birmingham, B3 3HP.

Patents ADP number (if you know it)

133005

6. If you are declaring priority from one or more  
earlier patent applications, give the country  
and the date of filing of the or each of these  
earlier applications and (if you know it) the or  
each application number

Country

Priority application number  
(if you know it)Date of filing  
(day/month/year)

7. If this application is divided or otherwise  
derived from an earlier UK application,  
give the number and the filing date of  
the earlier application

Number of earlier application

Date of filing  
(day/month/year)

8. Is a statement of inventorship and of right  
to grant of a patent required in support of  
this request? (Answer "Yes" if:

YES

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

## Patents Form 1/77

Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document.

Continuation sheets of this form -

Description 5

Claim(s) 3

Abstract 1

Drawing(s) 3 *only*

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Priority documents NONE

Translation of priority documents -

Statement of inventorship and right to grant of a patent (Patents Form 7/77) -

Request for preliminary examination and search (Patents Form 9/77) -

Request for substantive examination (Patents Form 10/77) -

Any other documents (please specify) -

11.

I/We request the grant of a patent based on the basis of this application

Signature

*Forrester Ketley & Co.*  
Forrester Ketley & Co.

Date

16 July, 2001

12. Name and daytime telephone number of person to contact in the United Kingdom

Diana Wardley (Dr)

0121 236 0484

## Warning

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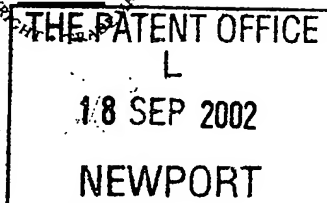
Patents Form 1/77

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7/77

**Statement of inventorship and of  
right to grant of a patent**



The Patent Office

Cardiff Road  
Newport  
South Wales  
NP10 8QQ

1. Your reference	A10373GB-DMW				
2. Patent application number (if you know it)	0117272.5				
3. Full name of the or of each applicant	Techtronic Industries Company Limited				
4. Title of the invention	Vacuum Cleaner				
5. State how the applicant(s) derived the right from the inventor(s) to be granted a patent	By virtue of Section 39(1) of the Patents Act 1977 (the inventors were employed, at the time of the invention, by Vax Ltd, the original applicant) and subsequent assignment (as recorded).				
6. How many, if any, additional Patents Forms 7/77 are attached to this form? (see note (c))					
7.	<p>I/We believe that the person(s) named over the page (and on any extra copies of this form) is/are the inventor(s) of the invention which the above patent application relates to.</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">Signature</td> <td style="text-align: center;">Date</td> </tr> <tr> <td style="text-align: center;">   Forrester Ketley &amp; Co. </td> <td style="text-align: center;"> 17 September, 2002 </td> </tr> </table>	Signature	Date	 Forrester Ketley & Co.	17 September, 2002
Signature	Date				
 Forrester Ketley & Co.	17 September, 2002				
8. Name and daytime telephone number of person to contact in the United Kingdom	Diana Wardley (Dr) 0121 236 0484				

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- e) Once you have filled in the form you must remember to sign and date it.

Enter the full names, addresses and postcodes of the inventors in the boxes and underline the surnames

KENT, Andrew John  
42 Oakhurst Drive  
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8466526001

Patents ADP number (if you know it):

ELSWORTHY, Christopher Thomas  
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GL51 0XB  
United Kingdom

8466524001

Patents ADP number (if you know it):

Reminder

Have you signed the form?

Patents ADP number (if you know it):

DUPLICATE

PATENTS ACT 1977

A10373GB-DMW

Title: Vacuum Cleaner

Description of Invention

The invention relates to a vacuum cleaner of the kind having a removable filter, and in particular although not exclusively to such a vacuum cleaner having a dust and dirt separation assembly which is itself removable and which includes the filter.

Most forms of vacuum cleaner include some kind of removable filter member located between the inlet for the dirty air and the motor which provides the suction. Such filters become blocked with dust and dirt during use of the cleaner and thus need to be removed periodically for cleaning or replacement, depending on their kind. Some users may then omit to replace the filter, either deliberately or by mistake, before using the cleaner. However, using the cleaner without the filter member in place can lead to damage to the motor if significant quantities of dust are permitted to enter it, and also results in much of the dust which should be filtered re-entering the atmosphere.

It is an object of the present invention to mitigate the above identified problem.

According to the present invention there is provided a vacuum cleaner including a removable filter element and wherein it further includes an indicator member having a first position when the filter member is removed from the cleaner and a second position when the filter member is in place in the cleaner and being readily visible to a user of the vacuum cleaner in at least one of the first and second positions.

The invention provides the advantage that the user can readily see whether the filter element is in place within the cleaner when they come to use it.

Preferably when the indicator member is in the first position the vacuum cleaner cannot be used to collect dust and dirt.

The vacuum cleaner may further include a removable dust and dirt separation assembly, the assembly having a dirty air inlet and a clean air outlet with an airflow path therebetween, the air flow path passing through a first separation means for separating larger particles of dirt from the dirty air, and a second separation means comprising the removable filter element for separating smaller particles of dust from the dirty air, and an air flow conduit with a first end for connection to the clean air outlet of the assembly and a second end for connection to a source of suction, and the assembly may further include the indicator member.

Preferably the indicator member is biased to the first position. Conveniently the indicator member is biased by means of a spring member.

Preferably when the indicator member is in its first position the assembly cannot be connected to the vacuum cleaner.

This provides the advantage that, even if the user does not notice that the indicator member is showing that the filter member is not within the assembly, the assembly cannot be connected to the vacuum cleaner and thus the motor is protected from damage in a way in which it would not be in the prior art.

The indicator member may be located such that when it is in its first position it obstructs the connection of the clean air outlet to the first end of the air flow conduit.

The clean air outlet may include a receiving formation for receipt of retaining formations of the first end of the air flow conduit, and the indicator member when in its first position is partially located within the receiving formation.

Preferably the indicator member is moved from the first position to the second position when the filter member is installed into the assembly.

The assembly may conveniently be of the kind which further comprises a dirt collection chamber where the dirt separated by the first separation means is collected.

According to a second aspect of the invention there is provided a dust and dirt assembly for incorporation into a vacuum cleaner according to the first aspect of the invention.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic illustration of parts of a vacuum cleaner according to the invention with the dust and dirt assembly removed;

Figure 2 is a schematic illustration of parts of a vacuum cleaner according to the invention with the dust and dirt assembly connected; and

Figure 3 is a perspective view of the top of the dust and dirt assembly and the first end of the air flow conduit separated for clarity.

A vacuum cleaner includes a dust and dirt assembly 10, an air flow conduit 12 with a first end 14 and a second end 16, and a motor 18 providing a source of suction. The dust and dirt assembly 10 comprises a dirt collection chamber 20, a dirty air inlet 22 and a clean air outlet 24 with an airflow path therebetween, the air flow path passing through a first separation means 26 for separating larger particles of dirt from the dirty air such that it is collected in the dirt collection chamber, and a second separation means comprising a removable filter element 28 for separating smaller particles of dust from the dirty air. The first separation means 26 is in this embodiment a cyclone separator, although it could take other forms such as a traditional bag.

The assembly 10 also includes an indicator member 30 adjacent to the clean air outlet 24. The indicator member 30 comprises a flag portion 32 which extends outwardly of the assembly 10, and a leg portion 34 which passes

through into the interior of the assembly 10, and around which is provided a biasing means in the form of a spring member 36. The indicator member 30 has a first position shown in Figure 1 (and in solid lines in Figure 3), to which it is biased by spring member 36, and a second position shown in Figure 2 (and in broken lines in Figure 3).

The assembly 10 further comprises a cap portion 40 which includes the clean air outlet 24, and surrounding that a receiving formation in the form of a groove 42 for receipt of engagement formations 44 on the first end 14 of the air flow conduit 12. When the first end 14 of the air flow conduit 14 is located within the groove 42 it is retained there by biased lugs 46. When it is desired to remove the assembly 10 from the vacuum cleaner these lugs 46 are released by depressing handle 48 to the position shown in the broken lines in Figure 3.

When the filter member 28 is removed from the assembly 10 the spring member 36 biases the indicator member 30 to the first position. However, when the filter member 28 is located correctly within the assembly 10 a flange 38 around it's upper end engages on the leg portion 34 of the indicator member 30 and pushes it upwards against the bias of the spring member 36 into it's second position.

The first position of the indicator member 30 is such that the flag portion 32 is located within the groove 42, thus obstructing the insertion of the first end 14 of the air flow conduit 12, and not clearly visible to the user. Thus the user can readily see that the filter member 28 must not be present in the assembly 10, and furthermore, even if they do not notice that, the assembly 10 cannot be connected to the vacuum cleaner for use and thus the vacuum cleaner cannot be used to collect dust and dirt.

The second position of the indicator member 30 is such that the flag portion 32 is raised up above the cap portion 40 of the assembly 10 and thus is both clearly visible to the user and no-longer obstructs the groove 42. Thus the



user can readily see that the filter member 28 is in place and can connect the assembly 10 to the vacuum cleaner as shown in Figure 2.

The provision of the indicator member 30 provides two distinct advantages over the prior art. First the user can clearly see when the filter member 28 is not in place within the assembly 10. Second, the assembly 10 cannot be connected to the vacuum cleaner without the filter member 28 being in place in the assembly 10, and thus damage cannot be done to the motor 18 as readily as in the prior art.

Although a single embodiment of a vacuum cleaner incorporating the invention has been described it will be appreciated that the invention may take many forms.

In the present specification "comprises" means "includes or consists of" and "comprising" means "including or consisting of".

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

## CLAIMS

1. A vacuum cleaner including a removable filter element wherein it further includes an indicator member having a first position when the filter element is removed from the cleaner and a second position when the filter element is in place in the cleaner and being readily visible to a user of the vacuum cleaner in at least one of the first and second positions.
2. A vacuum cleaner according to claim 1 wherein when the indicator member is in the first position the vacuum cleaner cannot be used to collect dust and dirt.
3. A vacuum cleaner according to claim 1 or 2 wherein it further includes:  
a removable dust and dirt separation assembly, the assembly having a dirty air inlet and a clean air outlet with an airflow path therebetween, the air flow path passing through a first separation means for separating larger particles of dirt from the dirty air, and a second separation means comprising the removable filter element for separating smaller particles of dust from the dirty air, and  
an air flow conduit with a first end for connection to the clean air outlet of the assembly and a second end for connection to a source of suction, and wherein the assembly further includes the indicator member.
4. A vacuum cleaner according to any one of the preceding claims wherein the indicator member is biased to the first position.
5. A vacuum cleaner according to claim 4 wherein the indicator member is biased by means of a spring member.

6. A vacuum cleaner according to any one of claims 3 to 5 wherein when the indicator member is in its first position the assembly cannot be connected to the vacuum cleaner.
7. A vacuum cleaner according to claim 6 wherein the indicator member is located such that when it is in its first position it obstructs the connection of the clean air outlet to the first end of the air flow conduit.
8. A vacuum cleaner according to claim 7 wherein the clean air outlet includes a receiving formation for receipt of retaining formations of the first end of the air flow conduit, and the indicator member when in its first position is partially located within the receiving formation.
9. A vacuum cleaner according to any one of claims 3 to 8 wherein the indicator member is moved from the first position to the second position when the filter element is installed into the assembly.
10. A vacuum cleaner according to any one of claims 3 to 9 wherein the assembly further comprises a dirt collection chamber where the dirt separated by the first separation means is collected.
11. A vacuum cleaner substantially as hereinbefore described with reference to the accompanying drawings.
12. A dust and dirt assembly for incorporation into a vacuum cleaner according to anyone of claims 3 to 11.

8

13. A dust and dirt assembly substantially as hereinbefore described with reference to the accompanying drawings.
14. Any novel feature or novel combination of features described herein and/or in the accompanying drawings.

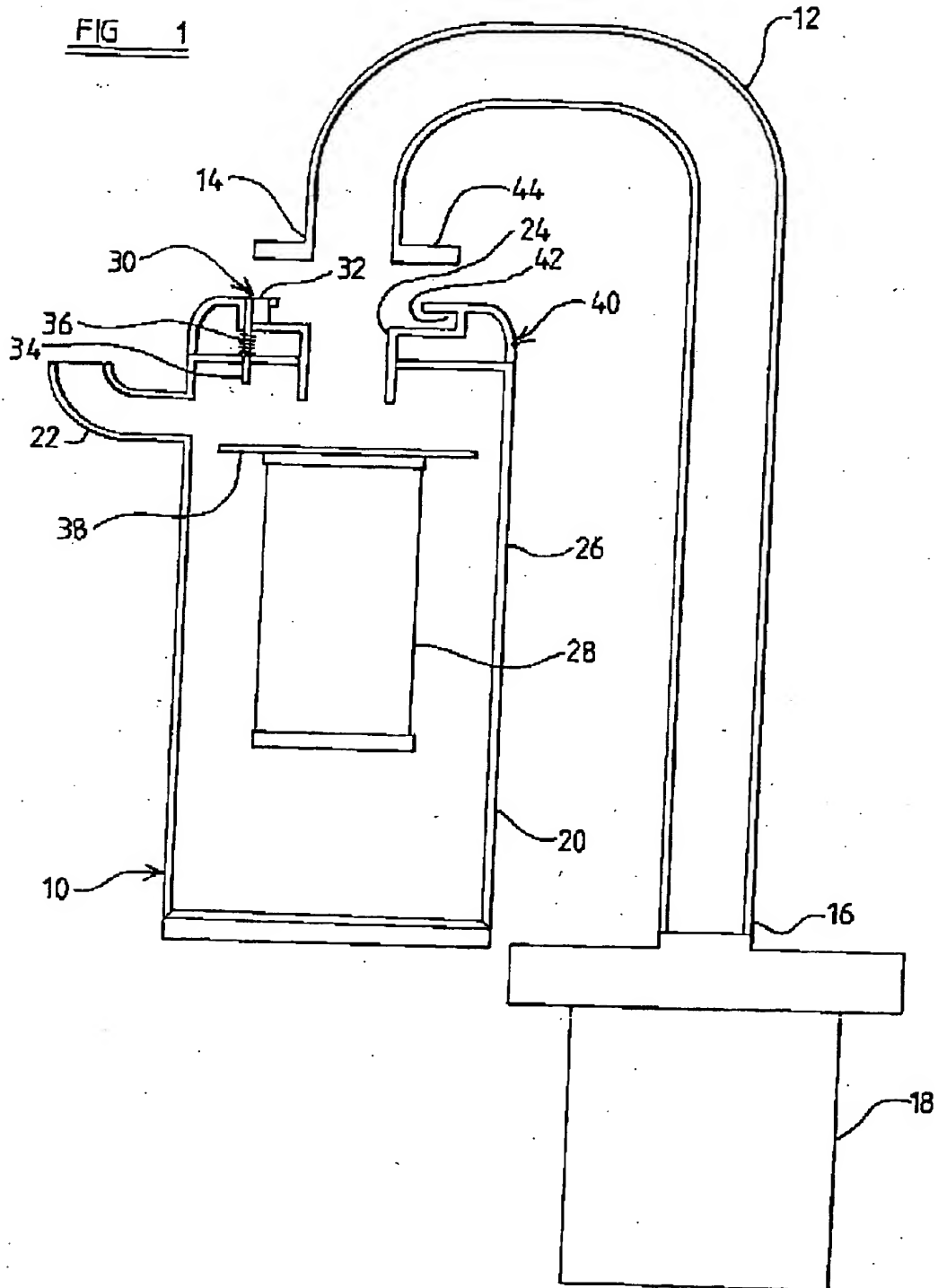
**ABSTRACT**

**Title: Vacuum Cleaner**

A vacuum cleaner is described which includes a removable filter element and which further includes an indicator member having a first position when the filter member is removed from the cleaner and a second position when the filter member is in place in the cleaner and being readily visible to a user of the vacuum cleaner in at least one of the first and second positions. In the vacuum cleaner described when the indicator member is in the first position the vacuum cleaner cannot be used to collect dust and dirt.

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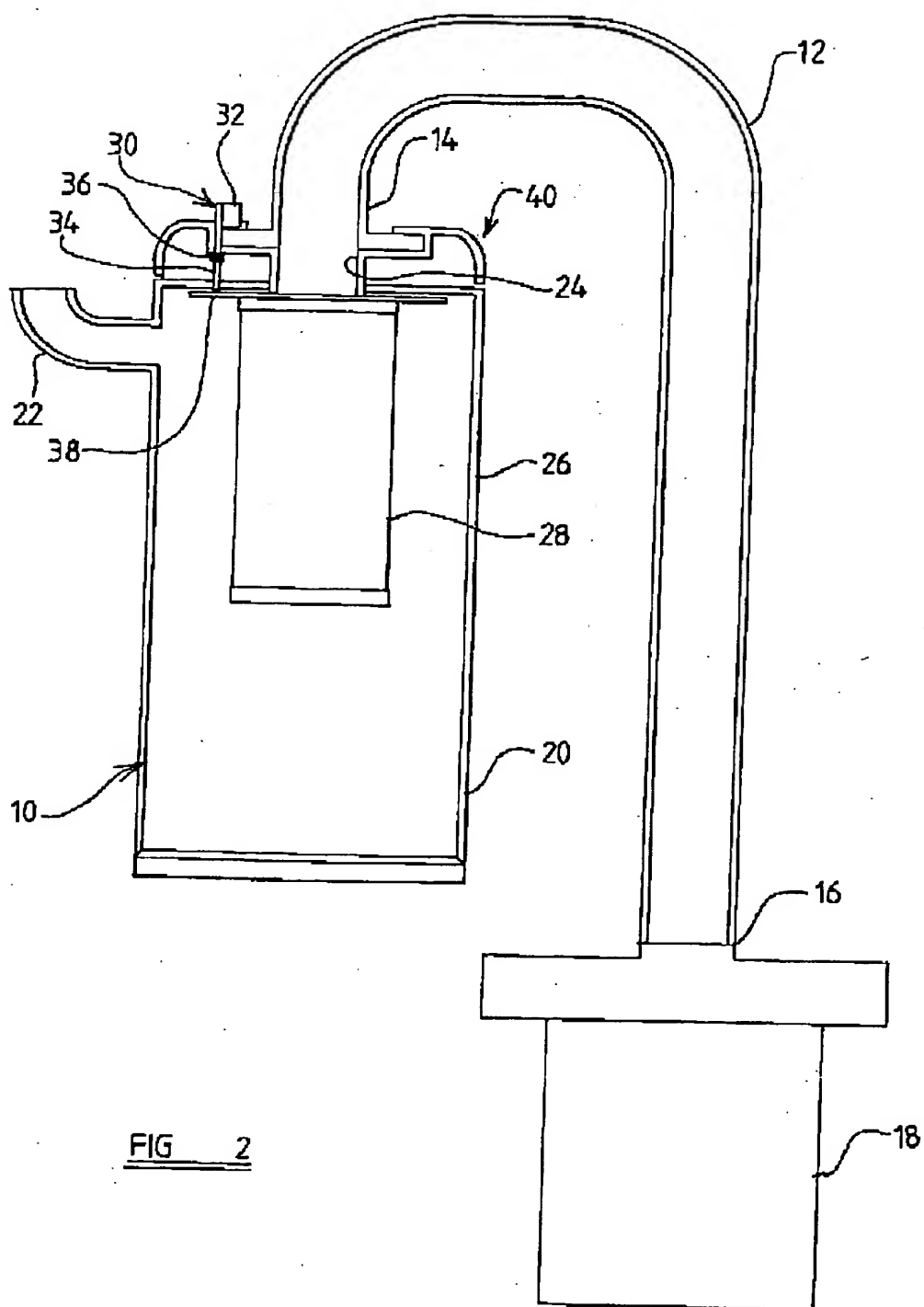
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FIG 1

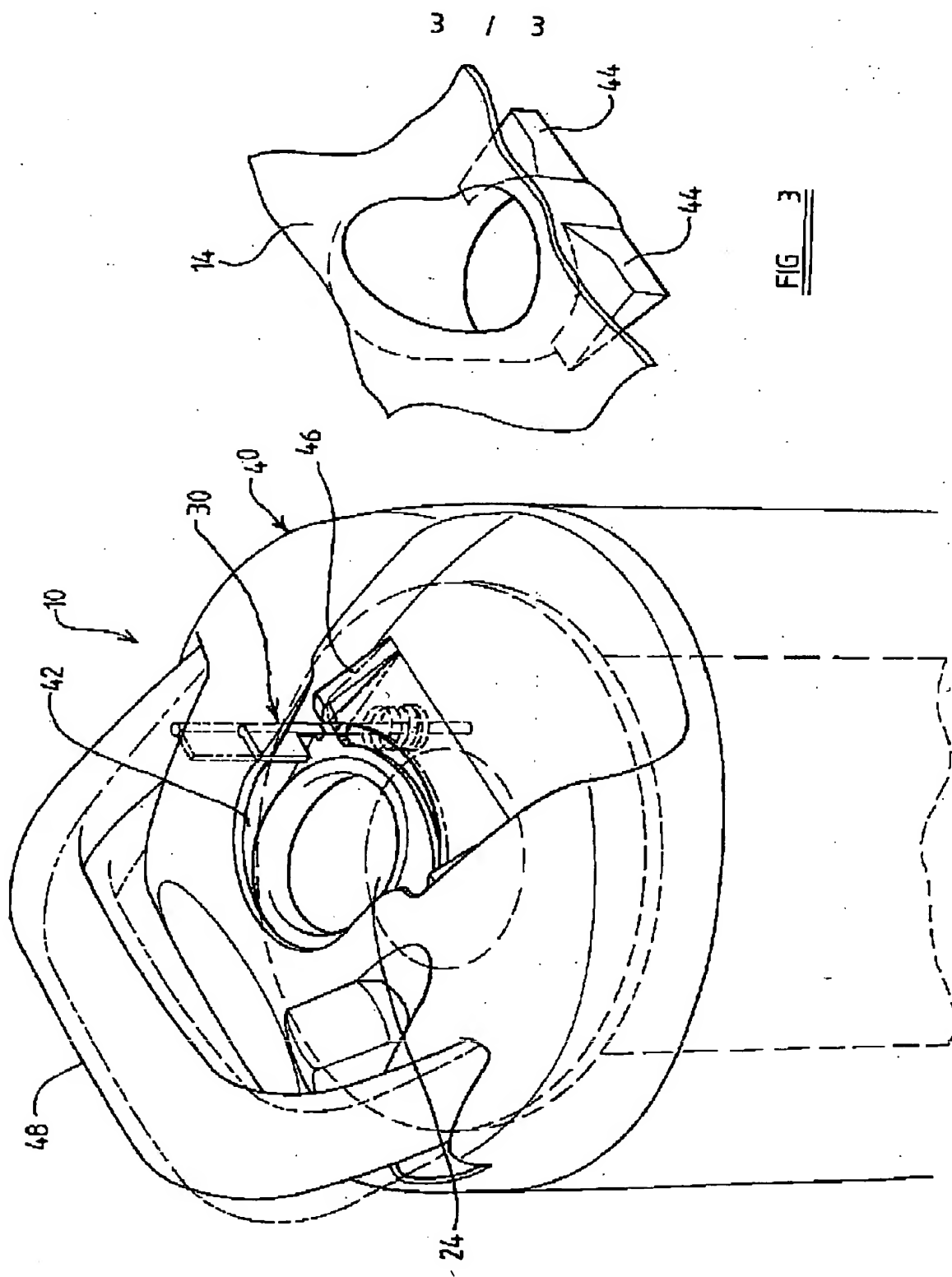
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